

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A fuel cell comprising:

an electrolyte electrode assembly including a pair of electrodes and an electrolyte interposed between said electrodes, said electrodes including respective gas diffusion layers and respective electrode catalyst layers facing said electrolyte, a surface area of one of said gas diffusion layers being larger than a surface area of the other of said gas diffusion layers, said one gas diffusion layer including an outer marginal region extending outwardly beyond an outer region of said other gas diffusion layer;

first and second metal separators for sandwiching said electrolyte electrode assembly, said first and second metal separators having respective reactant gas flow fields for supplying reactant gases to said electrodes, said first separator having a plurality of first inner surfaces contacting a cathode of said electrolyte electrode assembly, a plurality of second surfaces forming a portion of a coolant flow passage and a third substantially flat outermost peripheral surface offset from the cathode in a stacking direction of the fuel cell by a distance and extending outwardly from an outermost one of a reactant gas flow field beyond an outer region of the cathode; and

a seal member having a main seal with an outer boundary wholly interposed between and contacting said first metal separator and said electrolyte, and an inner portion interposed between and contacting the third surface of the first metal separator and a planar portion of the other gas diffusion layer,

wherein said inner portion of the seal member includes a flow field wall having a height substantially equal to the distance between the cathode and the third substantially flat outermost peripheral surface of the first separator to provide an air-tight seal therebetween, said flow field wall defining one portion of power generation areas of said electrodes,

wherein a side of said flow field wall, said outer region of said other gas diffusion layer, and a portion of the third surface of said first metal separator define an outermost one of said reactant gas flow fields.

2. (Currently Amended) A fuel cell according to claim 1, wherein

~~said first metal separator includes a surface in contact with said electrode, and a flat surface spaced from said electrode;~~

said seal member further includes a main seal is interposed between said electrolyte and said flat third surface; and

said flow field wall is interposed between said outer region of said other gas diffusion layer and said flat third surface.

3. (Original) A fuel cell according to claim 1, wherein said reactant gas flow field is a serpentine flow passage having at least one turn region;

said seal member further includes a partition seal in contact with said first metal separator and said other gas diffusion layer, said partition seal extending into said turn region of said reactant gas flow field to form said serpentine flow passage, said serpentine flow passage comprising grooves sealed air-tight; and

said reactant gas flows through said grooves along both sides of said partition seal in opposite directions.

4. (Currently Amended) A fuel cell according to claim 3, wherein

~~said first metal separator includes a surface in contact with said electrode, and a flat surface spaced from said electrode; and~~

said partition seal is interposed between said electrode and said flat third surface.

5. (Canceled)

6. (Currently Amended) A fuel cell, comprising:

an electrolyte electrode assembly including an electrolyte, a first electrode catalyst layer and a first gas diffusion layer disposed on a first side of the electrolyte, and a second electrode catalyst layer and a second gas diffusion layer disposed on a second opposite side of the electrolyte, wherein a surface area of the second gas diffusion layer is larger than a surface area of the first gas diffusion layer, the second gas diffusion layer having an outer marginal region extending outwardly beyond an outer region of the first gas diffusion layer;

first and second metal separators sandwiching said electrolyte electrode assembly;
and

a seal member having a main seal with an outer boundary wholly interposed between and contacting the first metal separator and the electrolyte forming an air tight seal therebetween, and an inner portion interposed between and contacting the first metal separator and a planar portion of the first gas diffusion layer forming an air tight seal therebetween.